# EXHIBIT A

# PARTIES' JOINT CLAIM CONSTRUCTION CHART FOR FAMILY 7 PATENTS

| Disputed Claim Term | Patent, Asserted Claims | Plaintiff's Proposed Construction | Defendants' Proposed Construction |
|---|---|---|---|
| "sleep mode" | '730 patent, claim 18, 22<br><br>'753 patent, claims 1, 2<br><br>'382 patent, claim 14[1] | "a state of operation in which power is consumed, but the amount of power consumed is less than when operating in a state with full data transmission capabilities"<br><br>Intrinsic Evidence:<br>*See, e.g.,* Exh. B ('730 patent),[2] at 2:34-42; 2:53-3:12; 3:62-64; 5:38-43; 5:52-57; 5:66-6:6; 6:67-7:3; 7:8-12; 7:29-35; 8:1-10; and 8:40-43. | "a mode in which the circuitry is not transmitting or receiving content and power to the circuitry is reduced for the purpose of power conservation"<br><br>Intrinsic Evidence<br><br>*See, e.g.,* Exh. B ('730 patent),[3] at Abstract; 2:34-39; 5:38-46; 5:52-57; 5:66-6:8; 6:48-57; 7:13-18; 8:48-54; 9:44-10:26; Exh. F ('447 provisional")) at 1-3. |
| "low power mode" | '404 patent, claims 1, 4, 6, 10 | "a state of operation in which power is consumed, but the amount of power consumed is less than when operating in a state with full data transmission capabilities"<br><br>Intrinsic Evidence:<br><br>*See, e.g.,* Exh. E ('404 patent), | ADTRAN's Proposal:<br><br>"a mode in which the circuitry is not transmitting or receiving content and the amount of power consumed by the circuitry is less than full power mode"<br><br>Intrinsic Evidence: |

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[1] During the meet-and-confer process, Plaintiff agreed to withdraw previously-asserted claim 22 of the '382 patent, and it is no longer asserted in this case.

[2] The '404, '730, '753, and '382 patents share a common disclosure.  For brevity, TQ Delta cites only to the '404 patent for all terms that the '404 patent shares with any of the other patents.  Citations to other Family 7 patents are noted in the chart.

[3] Defendants generally cite to the '730 patent for brevity, except for terms that only relate to other Family 7 patents, such as the '404 patent which is asserted only against ADTRAN.

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| | | at 2:54-64; 3:7-33; 4:15-17; 5:54-55; 6:1-5; 6:18-19; 7:13-14; 7:20-22; 7:43-48; 8:14-23; and 8:52-55. | *See, e.g.*, Exh. E ('404 patent), at Abstract; 2:55-63; 3:7-33; 5:54-62; 6:1-5; 6:15-24; 6:61-7:2; 7:13-14; 7:20-22; 7:27-32; 7:43-48; 8:14-23; 8:59-66; 9:58-67; Exh. F ('447 provisional")) at 1-3. |
| "synchronization signal" | '730 patent, claim 18, 22<br><br>'382 patent, claim 14<br><br>'404 patent, claims 1, 4, 6, 10 | "a signal used to maintain a timing relationship between transceivers by correcting errors or differences between a timing reference of the transmitter of the signal and a timing reference of the receiver of the signal"<br><br>Intrinsic Evidence:<br><br>*See, e.g.*, Exh. E ('404 patent), at 5:3-5; 5:37–53; 5:59-62; 6:22–25; 7:9-20; 8:64-9:5; and Fig. 1. | "a signal used to establish or maintain a timing relationship between transceivers that does not transmit content"<br><br>Intrinsic Evidence:<br>Exh. B ('730 patent), at 6:63-7:3; 5:20-46; 6:7-10; 6:67-7:3; 7:8-12; 7:29-44; FIG 1; Exh. F ('447 provisional) at 2-3. |
| "means responsive to a sleep mode command for:  (1) storing selected state parameters characteristic of the communications channel over which the transceiver is operating; and (2) reducing power to selected portions of transceiver circuitry" | '753 patent, claim 1, 2 | Means plus function limitation.<br><br>"Means responsive to a sleep mode command for"<br><br>Function:<br>The functions are:  (1) storing selected state parameters characteristic of the | 112 para 6<br><br>Function:<br>"(1) storing selected state parameters characteristic of the communications channel over which the transceiver is operating in response to a sleep mode command, and (2) |

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| | | communications channel over which the transceiver is operating, and (2) reducing power to selected portions of transceiver circuitry.<br><br>Structure:<br>The structure that corresponds to storing selected state parameters is a memory.  The structure that corresponds to reducing power to selected portion of transceiver circuitry is a controller implementing (1) an algorithm for a central office ("CO") transceiver that includes the steps of reducing or cutting off power to digital modulator/demodulator portions of the transmitter and receiver sections and reducing power to parts of the analog circuitry, or (2) an algorithm for a customer premises ("CPE") transceiver that includes the steps of reducing power to digital modulator/demodulator circuitry as well as to transmitter data line drivers. | reducing power to selected portions of transceiver circuitry in response to a sleep mode command"<br><br>Structure:<br>"The controller of the transceiver receives a sleep mode command and the first transceiver (1) stores its state in its own state memory corresponding to the state memory of the second transceiver, and (2) reduces or cuts off power to the digital modulator/demodulator portions and/or parts of the analog circuitry, as well as to transmitter data line drivers, of the transmitter and receiver sections of the transceiver"<br><br><br>Intrinsic Evidence:<br>*See*, *e.g.*, Exh. C ('753 patent), at 5:59-64; 6:18-60; 7:24-47; 8:27-37; FIGS. 1-3; Exh. F ('447 provisional) at 1-3. |

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| | | Intrinsic Evidence:<br><br>*See*, *e.g.*, Exh. C ('753 patent), at Figs. 1 and 2; 4:50-51; 5:4-6; 5:25-27; 6:18-29; 7:4-17; and 7:35-47. | |
| "means responsive to a wake-up command for: (1) restoring power to said transceiver; (2) restoring the state of said transceiver from said sleep mode by means of said stored parameters" | '753 patent, claim 1, 2 | Means plus function limitation.<br><br>"means responsive to a wake-up command for"<br><br>Function:<br>The functions are:  (1) restoring power to said transceiver, and (2) restoring the state of said transceiver from said sleep mode by means of said stored parameters.<br><br>Structure:<br>The structure that corresponds to performing these functions is a controller implementing (1) an algorithm for a CO transceiver that includes the steps of retrieving the CO's stored state from its memory and restoring full power to its circuitry, or (2) an algorithm for a CPE transceiver that includes the steps of retrieving | 112 para 6<br><br>Function:<br>"restoring power to said transceiver and restoring the state of said transceiver from said sleep mode by using said stored parameters in response to a wake-up command"<br><br>Structure:<br>"The first transceiver receives a wake-up command and in response transmits an exiting sleep mode signal to the second transceiver, retrieves its stored state from the state memory, restores full power to its circuitry, and restores the output of the Fast Fourier Transform to the input of the phase-lock loop"<br><br>Intrinsic Evidence:<br>*See*, *e.g.*, Exh. C ('753 patent), |

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| | | the CPE's stored state from its memory and restoring full power to its circuitry.<br><br>Intrinsic Evidence:<br><br>*See*, *e.g.*, Exh. C ('753 patent), at 4:50-51; 5:43-44; 7:50-62; and Figs. 1 and 2. | at 7:48-8:26; Exh. F ('447 provisional) at 1-3. |
| "means for maintaining a common, synchronized data frame count between said transceiver and a remote transceiver with which it communicates, to thereby facilitate restoration of communication without reinitialization of said transceiver" | '753 patent, claim 1, 2 | Means plus function limitation.<br><br>Function:<br>The function is maintaining a common, synchronized data frame count between said transceiver and a remote transceiver with which it communicates.<br><br>Structure:<br>The structure that corresponds to performing the function is a clock and frame counter.<br><br>Intrinsic Evidence:<br><br>*See*, *e.g.*, Exh. C ('753 patent), at 4:59-63; 5:39-44; and Fig. 1. | 112 para 6<br><br>Function:<br>"maintaining a common, synchronized data frame count between said transceiver and a remote transceiver with which it communicates, to thereby facilitate restoration of communication without reinitialization of said Transceiver"<br><br>Structure: Indefinite |
| "a synchronizer module that uses a synchronization signal to | '730 patent, claim 18, 22 | "a class of hardware and/or software structures, including a | 112 para 6 |

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| maintain synchronization between said multicarrier transceiver and a second multicarrier transceiver while said at least one component of said multicarrier transceiver is in the sleep mode" | | clock, that generates a synchronization signal or receives and uses a synchronization signal to maintain synchronization between said multicarrier transceiver and a second multicarrier transceiver while said at least one component of said multicarrier transceiver is in the sleep mode"<br><br>Intrinsic Evidence:<br><br>*See, e.g.*, Exh. B ('730 patent), at Fig. 1; 4:39-49; 5:20-33; 5:39-42; 7:1-13.<br><br>Back Up Construction if Sec. 112, para. 6 applies:<br><br>Function:<br>"using a synchronization signal to maintain synchronization between said multicarrier transceiver and a second multicarrier transceiver while said at least one component of said multicarrier transceiver is in the sleep mode" | Function: using a synchronization signal to maintain synchronization between said multicarrier transceiver and a second multicarrier transceiver while said at least one component of said multicarrier transceiver is in the sleep mode"<br><br>Structure: Indefinite<br><br>Back Up Construction if 112 para 6 does not apply:<br>"a hardware component that is operable to use a synchronization signal to maintain synchronization between said multicarrier transceiver and a second multicarrier transceiver while said at least one component of said multicarrier transceiver is in the sleep mode"<br><br>Intrinsic Evidence:<br><br>*See, e.g.*, Exh. B ('730 patent), at 4:50-64; 5:20-37; 5:38-46; 6:63-7:3; 7:29-40; 8:48-60; 9:15-19; Exh. F ('447 |

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| | | | provisional) at 2-3. |
| | | Structure: The structure that corresponds to performing the function is (1) for the CO transceiver, a clock and IFFT, or (2) for the CPE transceiver, a clock and PLL.<br><br>Intrinsic Evidence:<br><br>*See, e.g.*, Exh. B ('730 patent), at Fig. 1, 4:39-49, 5:20-33, 5:39-42, 7:1-13. | |
| "state parameters characteristic of the communications channel over which the transceiver is operating" | '753 patent, claim 1, 2 | "state parameters used by the transceiver for transmission and/or reception of data" | "A parameter(s) [representative /characteristic / associated with] of an [communication channel / operating mode / state / full power mode] that is established by initialization" |
| "at least one parameter representative of an operating mode"<br><br>"at least one parameter representative of a full power mode"<br><br>"at least one parameter | '730 patent, claim 18, 22<br><br><br><br>'382 patent, claim 14<br><br><br><br>'404 patent, claims 1, 4, 6, 10 | "at least one parameter associated with the transmission and/or reception of data during [operating mode / full power mode]"<br><br><br><br>Intrinsic Evidence: | Intrinsic Evidence:<br><br>*See, e.g.*, Exh. B ('730 patent), at 2:53-3:9; 6:54-63; 7:21-29; 7:58-67; 8:10-22; Exh. F ('447 provisional) at 2. |

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| associated with the full power mode operation" | | *See*, *e.g.*, Exh. E ('404 patent), at 5:13–15; 5:63–6:6; 6:67–7:9; and 7:64–8:4. | |
| "restore the full power mode by using the at least one parameter and without needing to reinitialize the transceiver" | '404 patent, claims 1, 4, 6, 10 | Plain and ordinary meaning<br><br>Intrinsic Evidence:<br><br>*See*, *e.g.*, Exh. E ('404 patent), at 7:57-8:13. | "restores the transceiver to full power mode by retrieving and using the at least one parameter without needing to reinitialize the transceiver"<br><br>Intrinsic Evidence<br>*See*, *e.g.*, Exh. E ('404 patent), at 7:57-8:13. |
| "recovering said at least one stored parameter from the memory"<br><br>"recovered parameter" | '730 patent, claim 18, 22<br><br>'382 patent, claim 14 | "retrieving said at least one stored parameter from the memory"<br><br>"parameter that is retrieved"<br><br><br>Intrinsic Evidence:<br>*See*, *e.g.*, Exh. B ('730 patent), at 7:51-58. | "retrieves the stored parameter from the memory"<br><br>"parameter that is retrieved from the memory"<br><br>Intrinsic Evidence<br>*See*, *e.g.*, Exh. B ('730 patent), at 7:51-53. |

| Claim Term | Patent, Claims | Agreed Construction |
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| "multicarrier" | '730 patent, claims 18, 22<br><br>'753 patent, claim 1, 2<br><br>'382 patent, claim 14 | "having multiple carrier signals that are combined to produce a transmission signal" |
| "wherein the at least one parameter comprises at least one of a fine gain parameter and a bit allocation parameter" | '404 patent, claims 1, 4, 6, 10 | "wherein the at least one parameter includes a fine gain parameter and/or a bit allocation parameter" |

| Claim Term | Patent, Claims | Agreed Construction |
|---|---|---|
| "wherein said at least one parameter comprises at least one of a frequency domain equalizer coefficient, a time-domain equalizer coefficient, an echo canceller tap, a data rate, a coding parameter, an interleaving parameter, a fine gain parameter, a subchannel gain parameter, and a bit allocation table" | '730 patent, claim 22 | "wherein said at least one parameter includes a frequency domain equalizer coefficient, a time-domain equalizer coefficient, an echo canceller tap, a data rate, a coding parameter, an interleaving parameter, a fine gain parameter, a subchannel gain parameter, and/or a bit allocation table" |
| "transceiver" | '730 patent, claims 18, 22<br><br>'753 patent, claims 1, 2<br><br>'382 patent, claims 14<br><br>'404 patent, claims 1, 4, 6, 10 | The Parties agree to be bound by the Court's construction of "transceiver" in Family 1.[4],[5] |
| "store in a low power mode, at least one parameter" | '404 patent, claims 1, 4, 6, 10 | "maintain in memory, while in low power mode, at least one parameter" |

[4] Defendants have proposed that "transceiver" should be construed as "communications device capable of transmitting and receiving data" based on at least the following intrinsic evidence:  *see, e.g.,* Exh. B ('730 patent), at 1:15-16; 1:26-30; 2:34-39; 3:41-51; 3:61-4:2; FIG. 2.  Defendants agree to be bound by the Court's construction of "transceiver" in Family 1 for purposes of streamlining the case.  Defendants reserve the right to challenge the Court's construction of "transceiver" on appeal as to all Families 1-10.

[5] Plaintiff has proposed that "transceiver" should be construed to mean "communications device capable of transmitting and receiving data wherein the transmitter portion and receiver portion share at least some common circuitry based on at least the following intrinsic evidence:  *see*, *e.g*., Exh. E (404 patent) at Fig. 1; 4:14-17, 6:1-6, 7:15-20, 7:33-42.  Plaintiff agrees that the Court's construction of "transceiver" in the Family 1 Patents applies to "transceiver" as used in the Family 7 Patents.  Plaintiff reserves the right to challenge the Court's construction of "transceiver" on appeal as to all Families 1-10.

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| "synchronization frame" | '404 patent, claims 1, 4, 6, 10 | "a frame that indicates a superframe boundary" |